COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY

An International Journal

EDITOR: G. A. KERKUT (*Southampton*)

List of Contents and Author Index

Volume 102 Part B, 1992

PERGAMON PRESS
OXFORD · NEW YORK · SEOUL · TOKYO

Comparative Biochemistry and Physiology

Editor

Professor G. A. KERKUT, Department of Physiology and Biochemistry, University of Southampton, Southampton SO9 3TU, England (Executive Editor) (Tel.: 0703 594341; Fax: 0703 594319)

Assistant Editor

Dr I. GILES, Department of Physiology and Biochemistry, University of Southampton, Southampton SO9 3TU, England (Tel.: 0703 594341; Fax: 0703 594319)

Members of the Honorary Editorial Advisory Board

H. L. ATWOOD (Toronto)
H. BRETTING (Hamburg)
T. BRITTAIN (Auckland)
E. FLOREY (Konstanz)
M. J. GARSON (Queensland)
M. J. GREENBERG (St Augustine)
T. T. HERSKOVITS (New York)
H. HUDDART (Lancaster)
J.-M. KORNPROBST (Nantes)
L. G. MAGAZANIK (St Petersburg)
C. P. MAGNUM (Williamsburg)
T. A. MCKEAN (Idahoe)
D. NASSEL (Stockholm)
T. PIEK (Amsterdam)
E. SKADHAUGE (Frederiksberg)
H. TAKEUCHI (Gifu)
E. W. TAYLOR (Birmingham)
P. VANNI (Florence)
D. A. YORK (Baton Rouge)
P. F. ZAGALSKY (London)

Publishing, Subscription and Advertising Offices: *Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, England (Tel.:* 0865 794141; *Fax:* 0865 60285).

North America: *Pergamon Press Inc.*, 660 *White Plains Road, Tarrytown, NY* 10591-5153, *U.S.A.*

Subscription Rates

Annual Institutional Subscription Rate (1992): Part A, Comparative Physiology £1020.00 (US$1850.00); Part B, Comparative Biochemistry £1025.00 (US$1860.00); Part C, Comparative Pharmacology and Toxicology £720.00 (US$1305.00). Combined Subscription, £2560.00 (US$4645.00). Two-year Institutional Rate (1992/93): Part A, £1938.00 (US$3515.00); Part B, £1947.00 (US$3534.00); Part C, £1368.00 (US$2479.00). Combined Subscription, £4864.00 (US$8825.50). Sterling prices are definitive. US dollar prices are quoted for convenience only, and are subject to exchange rate fluctuation. Prices include postage and insurance and are subject to change without notice. Subscription rates for Japan include despatch by air and prices are available on request. Personal subscription rate for those whose library subscribes at the regular rate (1992): price on application.

Parts A and B published monthly: three volumes of each part per year, four issues per volume (Part A—1st of the month; Part B—15th of the month). Part C published monthly except in March, August and December: three volumes per year, three issues per volume.

Second Class Postage Paid at RAHWAY NJ. Postmaster send address corrections to Comparative Biochemistry and Physiology Part B, c/o Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

Back Issues

Back issues of all previously published volumes, in both hard copy and microform, are available direct from Pergamon Press offices.

Copyright © 1992 Pergamon Press Ltd

Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.

CONTENTS OF 102B

Vol. 102B, No. 1

J.-Z. Pan, C. Shaw, D. W. Halton, L. Thim, C. F. Johnston and K. D. Buchanan	1	The primary structure of peptide Y (PY) of the spiny dogfish, *Squalus acanthias*: immunocytochemical localisation and isolation from the pancreas
Sachiko Takesue, Kunio Yokota, Shigetoshi Miyajima, Ryo Taguchi, Hiroh Ikezawa and Yoshiki Takesue	7	Partial release of aminopeptidase N from larval midgut cell membranes of the silkworm, *Bombyx mori*, by phosphatidylinositol-specific phospholipase C
Daphne Gail Fautin and Jerold M. Lowenstein	13	Scyphomedusae and their polyps are the same immunologically: implications for systematics
Masatoshi Mita and Nobuo Ueta	15	Fatty chains of alkenylacyl, alkylacyl and diacyl phospholipids in sea urchin spermatozoa
Le Huu Hieu, J. Nemcsók, E. Molnár and L. Dux	19	Different sensitivity of the sarcoplasmic reticulum Ca^{2+}-ATPase enzyme to fluorescein-isothiocyanate in rabbit and carp muscles
G. Bradley, D. Litthauer and W. Oelofsen	25	Partial characterisation of human and porcine adipose acidic protease activity
T. Nakano, M. Sato and M. Takeuchi	31	Partial purification and properties of glutathione peroxidase from carp hepatopancreas
Patrick Gendry and Jean-François Launay	37	Pancreatic anionic trypsin: evidence for the existence of a 30 kDa form
Ulrich Schraermeyer, Michael Rack and Hennig Stieve	43	Isolation of the rhabdomeral microvillar cytoskeleton of the crayfish (*Orconectes limosus*) photoreceptor by a crosslinking reagent
M. Osanai and S. Nagaoka	49	Adenine compounds in the male reproductive tract and the spermatophore of the silkmoth, *Bombyx mori*
J. Ramon Formas, Sonia Lacrampe and Lila Brieva	57	Allozymic and morphological differentiation among three South American frogs, genus *Eupsophus* (*E. roseus*, *E. insularis* and *E. contulmoensis*)
A. Guillou, G. Choubert and J. de la Noüe	61	Comparative accumulations of labelled carotenoids (^{14}C-astaxanthin, ^{3}H-canthaxanthin and ^{3}H-zeaxanthin) and their metabolic conversions in mature female rainbow trout (*Oncorhynchus mykiss*)
K. A. Krishnan, J. A. Proudman and J. M. Bahr	67	Purification and characterization of chicken follicle-stimulating hormone
Jeremy H. A. Fields	77	The effects of aestivation on the catalytic and regulatory properties of pyruvate kinase from *Helix aspersa*
Nora M. Navone, Elba S. Vázquez, César F. Polo and Alcira M. del C. Batlle	83	Rhodanese and ALA-S in mammary tumor and liver from normal and tumor-bearing mice
Nora M. Navone, Susana G. Afonso, César F. Polo and Alcira M. del C. Batlle	87	Uroporphyrinogen decarboxylase from mouse mammary carcinoma and liver of normal and tumor-bearing mouse
Maggie Cusack, Gordon Curry, Heather Clegg and Geoff Abbott	93	An intracrystalline chromoprotein from red brachiopod shells: implications for the process of biomineralization
Rakesh K. Srivastava	97	Changes in polyamines during embryonic development of Atlantic salmon, *Salmo salar*

Nget-Hong Tan and Gnanajothy Ponnudurai	103	A comparative study on the electrophoretic patterns of snake venoms
Sai On Chan, Susanna Siu Chun Wong and Desmond Chak Yew Yeung	111	Expression of c-Ki-*ras* in developing rat liver
P. F. Silveira, L. N. Schiripa and Z. P. Picarelli	119	Hydrolysis of L-cystine-di-β-naphthylamide and neurohypophyseal peptides by the plasma of the snake *Bothrops jararaca*
Gheorghe Benga, Dorin Poruţiu, Adriana Hodârnău and William Ferdinand	123	Ultrastructural aspects and amino acid composition of the purified inner and outer membranes of human liver mitochondria as compared to rat liver mitochondria
Toshihide Nishimura, Yutaka Kato, Mee Ra Rhyu, Akihiro Okitani and Hiromichi Kato	129	Purification and properties of aminopeptidase C from porcine skeletal muscle
Gregory R. Stuart, Brian Dixon and Bill Pohajdak	137	Isolation of a putative retrovirus *pol* gene fragment from trout
Sau-Wah Kwan and Creed W. Abell	143	cDNA cloning and sequencing of rat monoamine oxidase A: comparison with the human and bovine enzymes
Osamu Maeda, Takao Ojima and Kiyoyoshi Nishita	149	Calpain II-like proteinase of scallop (*Patinopecten yessoensis*) striated adductor muscle
Osamu Maeda, Takao Ojima and Kiyoyoshi Nishita	155	Comparative studies on heat stability and autolysis of scallop (*Patinopecten yessoensis*) calpain II-like proteinase and rabbit calpain II
Hiroyuki Sumi, Kyoko Kawabe and Nobuyoshi Nakajima	159	Effect of various polyamino acids and D- and L-amino acids on the blood fibrinolytic system
Hiroyuki Sumi, Nobuyoshi Nakajima and Hisashi Mihara	163	Fibrinolysis relating substances in marine creatures
Teruyuki Niimi and Toshinobu Yaginuma	169	Biosynthesis of NAD-sorbitol dehydrogenase is induced by acclimation at 5°C in diapause eggs of the silkworm, *Bombyx mori*
Noellette M. Conway and Judith E. McDowell Capuzzo	175	High taurine levels in the *Solemya velum* symbiosis
T. N. Zvyagintseva, L. A. Elyakova and V. B. Krasohin	187	The search for effectors of β-D-glucanases among marine invertebrates
Valery M. Dembitsky, Andrey G. Kashin and Kamen Stefanov	193	Comparative investigation of phospholipids and fatty acids of freshwater molluscs from the Volga river basin

Vol. 102B, No. 2

Mini Review

D. S. Kaufman and G. H. Miller	199	Overview of amino acid geochronology

General Papers

Bernard Simon, Philippe Sébert, Christine Cann-Moisan and Lucien Barthélémy	205	Muscle energetics in yellow freshwater eels (*Anguilla anguilla* L.) exposed to high hydrostatic pressure (101 ATA) for 30 days
Attilio Arillo, Federico Melodia and Barbara Marsano	209	Nitrite biotransformation by mitochondria from the earthworm *Eisenia foetida* (Savigny)
Elizabeth W. Bingham and Edyth L. Malin	213	Alkaline phosphatase in the lactating bovine mammary gland and the milk fat globule membrane. Release by phosphatidylinositol-specific phospholipase C

Jacques R. Vanfleteren	219	Cu–Zn superoxide dismutase from *Caenorhabditis elegans*: purification, properties and isoforms
Dieter Bödeker and Holger Martens	231	Elevated urinary excretion of orotic acid in sheep caused by intraruminal infusion of sodium propionate
A. H. W. Mendis, R. C. A. Thompson, J. A. Reynoldson, A. Armson, B. P. Meloni and S. Gunsberg	235	The uptake and conversion of L-[U^{14}C-] aspartate and L-[U^{14}C-] alanine to $^{14}CO_2$ by intact trophozoites of *Giardia duodenalis*
Theresa J. Reape and Ann M. Burnell	241	Dauer larva recovery in the nematode *Caenorhabditis elegans*—III. The effect of inhibitors of protein and mRNA synthesis on the activity of the enzymes of intermediary metabolism in recovering dauer larvae
Djagal W. Marseno, Kanji Hori and Keisuke Miyazawa	247	Distribution of 5′-nucleotidase in muscle of some marine fishes
Shigeru Kimura	255	Wide distribution of the skin type I collagen α3 chain in bony fish
Esteban C. Dell'Angelica, Carlos A. Stella, Mario R. Ermácora, Eugenia H. Ramos and José A. Santome	261	Study on fatty acid binding by proteins in yeast. Dissimilar results in *Saccharomyces cerevisiae* and *Yarrowia lipolytica*
M. Wakita, N. Yamabata, Y. Kobayashi and S. Hoshino	267	Characteristics of chicken serum transferrin and immunological determination of its serum levels in dwarf chickens
Nin-Nin Chuang, Kung-Shih Lin and Bei-Chia Yang	273	Purification and characterization of an α-glucosidase from the hepatopancreas of the shrimp *Penaeus japonicus* (Crustacea: Decapoda)
Nin-Nin Chuang, John Darr Huang and Kung-Shih Lin	279	Comparative study of free and membrane-bound acidic β-D-glucosidase from the hepatopancreas of the shrimp *Penaeus japonicus* (Crustacea: Decapoda)
Fulvia Basaglia, Maria Gabriella Marchetti and Carlo Cucchi	285	The effects of phenylhydrazine and cobalt chloride on the electrophoretic and isoelectric focusing behaviour of some enzymes in *Clarias gariepinus* (Clariidae, Teleostei)
Dietmar Kültz, Ralf Bastrop, Karl Jürss and Dietrich Siebers	293	Mitochondria-rich (MR) cells and the activities of the Na^+/K^+-ATPase and carbonic anhydrase in the gill and opercular epithelium of *Oreochromis mossambicus* adapted to various salinities
Liliana Busconi, Eduardo J. Folco, Claudia Studdert and Jorge J. Sanchez	303	Purification and characterization of a latent form of multicatalytic proteinase from fish muscle
Eduardo J. Folco, Liliana Busconi, Claudia Studdert, Claudia A. Casalongue and Jorge J. Sanchez	311	Distribution of multicatalytic proteinase in fish tissues
Nicholas J. Vietri and Willard O. Granath Jr	315	Identification, comparison and partial characterization of glycoproteins in the hemolymph of *Schistosoma mansoni* (Trematoda)-susceptible and resistant *Biomphalaria glabrata* (Gastropoda)
Bruno Lomonte and Elena Carmona	325	Individual expression patterns of myotoxin isoforms in the venom of the snake *Bothrops asper*
R. Lucchi, A. Poli, U. Traversa and O. Barnabei	331	Characterization of A_1 adenosine receptors in membranes from whole goldfish brain
Richard J. Middleton and Deryck G. Walker	337	A comparison of hepatic glucokinase gene expression in high- and low-activity strains of mice

Saburo Uchiyama, Kazumasa Isobe and Shin-ichi Nagai 343 Determination of the molecular weights of ribonuclease isozymes in a cell-free crude extract of *Dictyostelium discoideum*, by activity-staining of gels after SDS–PAGE

Philippe Roch, Calogero Canicatti and Silvia Sammarco 349 Tetrameric structure of the active phenoloxidase evidenced in the coelomocytes of the echinoderm *Holothuria tubulosa*

Hirosuke Oku, Eisaku Oohama, Noriyasu Yagi, Atsushi Urahashi, Junichi Nagata, Choyu Shinjyo and Isao Chinen 357 Age-related changes of the branched-chain fatty acid concentration in rat skin surface lipid

Daniel J. Peet, Richard E. H. Wettenhall, Donald E. Rivett and Anthony K. Allen 363 A comparative study of covalently-bound fatty acids in keratinized tissues

H. S. Yong 367 Allozyme variation in the melon fly *Dacus cucurbitae* (Insecta: Diptera: Tephritidae) from Peninsular Malaysia

P. Legrand and P. Lemarchal 371 Stearyl–CoA desaturase activity and triglyceride secretion in isolated and cultured hepatocytes from genetically lean and fat chickens

S. Gertler and N. M. Young 377 Thiol groups and other chemical characteristics of rat monoclonal immunoglobulin A

Edward Forsyth Wilson, George G. Brown and Charles D. Drewes 383 Characterization of phosphorus metabolism during six stages of development in the earthworm *Eisenia foetida* using ^{31}P-NMR

George G. Brown and Charles D. Drewes 389 ^{31}P-NMR analysis of phospholombricine and other phosphorus-containing metabolites in selected freshwater and terrestrial oligochaetes

Pavel Uhrín and Tibor Liptaj 397 Effect of training on fibre composition and phosphate metabolites in rest measured *in vitro* in muscles of young pigs

Patricio Meneses and Nelson Navarro 403 ^{31}P NMR phospholipid profile study of seven sea anemone species

Andrea Santulli, Noel P. Wilkins and Vincenzo D'Amelio 409 Two tissue-specific loci for octopine dehydrogenase in *Tapes decussatus* (Bivalvia, Veneridae)

N. Koueta and E. Boucaud-Camou 413 Changes of aspartate transcarbamylase activity in the gonad of *Sepia officinalis* L. during the sexual cycle

Nevenka Bihari, Renato Batel and Rudolf K. Zahn 419 Fractionation of DNA from marine invertebrate (*Maja crispata*, *Mytilus galloprovincialis*) haemolymph by alkaline elution

Douglas J. Clarke, Brian Burchell and Stephen G. George 425 Functional and immunochemical comparison of hepatic UDP-glucuronosyltransferases in a piscine and a mammalian species

Haydée Fukuda, Sergio Paredes and Alcira M. del C. Batlle 433 Tumour-localizing properties of porphyrins. *In vivo* studies using free and liposome encapsulated aminolevulinic acid

Vol. 102B, No. 3

Mini Review

Y. D. Sharma 437 Structure and possible function of heat-shock proteins in *Falciparum* malaria

Hirofumi Kanoh, Takao Kitamura and Yoshinari Kobayashi 445 A sulfated proteoglycan from the red alga *Gracilaria verrucosa* is a hemagglutinin

Kenneth H. Lockey 451 Insect hydrocarbon chemotaxonomy: cuticular hydrocarbons of adult and larval *Epiphysa* species Blanchard and adult *Onymacris unguicularis* (Haag) (Tenebrionidae: Coleoptera)

Maria Consuelo Navarro, Italo M. Cesari and R. Nino Incani 471 Isoenzyme studies in one Brazilian and two Venezuelan strains of *Schistosoma mansoni*

E. Kiehl and J. D'Haese 475 A soluble calcium-binding protein (SCBP) present in *Drosophila melanogaster* and *Calliphora erythrocephala* muscle cells

Moshe Tom, Milton Fingerman, Timothy K. Hayes, Virginia Johnson, Bella Kerner and Esther Lubzens 483 A comparative study of the ovarian proteins from two penaeid shrimps, *Penaeus semisulcatus* de Haan and *Penaeus vannamei* (Boone)

Manuel B. Aguilar, L. Scott Quackenbush, Donald T. Hunt, Jeffrey Shabanowitz and Alberto Huberman 491 Identification, purification and initial characterization of the vitellogenesis-inhibiting hormone from the Mexican crayfish *Procambarus bouvieri* (Ortmann)

Futoshi Aranishi, Kenji Hara and Tadashi Ishihara 499 Purification and characterization of cathepsin H from hepatopancreas of carp *Cyprinus carpio*

Zakia El Hachimi, M'hamed Tijane, Gérard Boissonnet, Abdelaziz Benjouad, Michel Desmadril and Jeannine M. Yon 507 Comparison of muscle phosphofructokinase from euthermic and hibernating *Jaculus orientalis*. Purification and determination of the quaternary structure

Luciana C. C. Leite, M. Fatima D. Furtado, Tania C. Correa and Isaias Raw 515 Characterization of the snake venoms from seven Brazilian species of *Bothrops* by FPLC anion-exchange chromatography

Gene A. Hines, Stephen A. Watts, Charles W. Walker and Peter A. Voogt 521 Androgen metabolism in somatic and germinal tissues of the sea star *Asterias vulgaris*

M. J. Polanco, M. T. Agapito and J. M. Recio 527 Inhibition and affinity chromatography of chicken lung angiotensin I-converting enzyme with captopril

Alexander J. Szalai, M. T. Norcum, J. E. Bly and L. W. Clem 535 Isolation of an acute-phase phosphorylcholine-reactive pentraxin from channel catfish (*Ictalurus punctatus*)

Alexander J. Szalai, J. E. Bly and L. W. Clem 545 Chelation affects the conformation, lability and aggregation of channel catfish (*Ictalurus punctatus*) phosphorylcholine-reactive protein (PRP)

Vincent M. Mann, Victor U. Nwosu, Anne Silcox, Carolyn J. P. Jones, Keith Burdett and Martin J. Connock 551 Subcellular fractionation evidence for a putative peroxisome–mitochondrion attachment in the liver of normal and genetically obese (*ob*/*ob* and *db*/*db*) mice

Vincent M. Mann, Victor U. Nwosu, Anne Silcox, Carolyn J. P. Jones, Keith Burdett and Martin J. Connock 561 Association of monoamine oxidase and malate dehydrogenase with liver peroxisomes of genetically obese (*ob*/*ob* and *db*/*db*) mice

J. M. Russom, G. R. Guba, D. Sanchez, C. F. Tam, G. A. Lopez and R. E. Garcia 573 Plasma lipoprotein cholesterol concentrations in the golden-mantled ground squirrel (*Spermophilus lateralis*): a comparison between pre-hibernators and hibernators

Eluid N. M. Njagi, Norah K. Olembo and David J. Pearson 579 Proline transport by tsetse fly *Glossina morsitans* flight muscle mitochondria

Telma S. Alonso, Ida C. Bonini de Romanelli, Ana M. Roccamo de Fernández and Francisco J. Barrantes 585 Polyphosphoinositide synthesis and protein phosphorylation in the plasma membrane from full-grown *Bufo arenarum* oocytes

L. Swevers, J. G. D. Lambert and A. De Loof 591 On the origin of vertebrate-type steroids present in *Locusta migratoria*: do they originate from the food?

B. Varriale, I. Serino, S. Minucci and G. Chieffi 601 Effect of castration and testosterone therapy on Harderian gland protein patterns of the golden hamster (*Mesocricetus auratus*)

Leslie S. Indrasith and Hidetaka Hori 605 Isolation and partial characterization of binding proteins for immobilized delta endotoxin from solubilized brush border membrane vesicles of the silkworm, *Bombyx mori*, and the common cutworm, *Spodoptera litura*

Thomas W. Keenan, C. M. Huang and Charles H. Zierdt 611 Comparative analysis of lipid composition in axenic strains of *Blastocystis hominis*

Takao Sugiura, Hideki Matoba and Naotoshi Murakami 617 Myosin light chain patterns in histochemically typed single fibers of the rat skeletal muscle

Inke Sunila and Christopher F. Dungan 621 Different proteins in the hemolymph sera from sarcomatous and healthy soft shell clams, *Mya arenaria* L.

Franz-Josef Roters and Ernst Zebe 627 Proteinases of the medicinal leech, *Hirudo medicinalis*: purification and partial characterization of three enzymes from the digestive tract

N. N. Brustovetsky, M. V. Egorova and E. I. Mayevsky 635 Regulation of oxidative activity and $\Delta\Psi$ of liver mitochondria of active and hibernating gophers. The role of phospholipase A_2

E. V. Berdyshev, O. E. Getmanova, V. I. Svetashev and A. A. Kubanin 639 The heptadecanoic fatty aldehyde—one of the main aldehydes of the far-eastern *Bryozoa*

Vol. 102B, No. 4

Mini Reviews

Timothy J. Beanland and Christopher J. Howe 643 The inference of evolutionary trees from molecular data

Guido di Prisco and Maurizio Tamburrini 661 The hemoglobins of marine and freshwater fish: the search for correlations with physiological adaptation

Zulema Coppes 673 Lactate dehydrogenase in teleosts. The role of LDH-C_4 isozyme

Norio Suzuki and Ken-ichi Yoshino 679 The relationship between amino acid sequences of sperm-activating peptides and the taxonomy of echinoids

General Papers

Ken-ichi Yoshino, Toshifumi Takao, Yasutsugu Shimonishi and Norio Suzuki 691 Sperm-activating peptide type-V (SAP-V), a fifth member of the sperm-activating peptide family, purified from the egg-conditioned media of the heart urchin *Brissus agassizii*

D. A. Hudson 701 Constitutive protein secretion by guinea-pig seminal vesicle epithelial cells

P. C. Lee and M. Struve 707 Unsaturated fatty acids inhibit glucocorticoid receptor binding of trout hepatic cytosol

Isamu Shimizu 713 Comparison of fatty acid compositions in lipids of diapause and non-diapause eggs of *Bombyx mori* (Lepidoptera: Bombycidae)

R. J. Pollero, M. R. González-Baró and C. Garín 717 Lipid transport in snails. Partial characterization of a high-density lipoprotein isolated from *Ampullaria canaliculata* plasma

Carlos E. Irazú, María del R. González Baró and Ricardo J. Pollero 721 Effect of environmental temperature on mitochondrial β-oxidation activity in gills and hepatopancreas of the freshwater shrimp *Macrobrachium borellii*

Marina T. Assakura, Maria de Fatima Furtado and Fajga R. Mandelbaum 727 Biochemical and biological differentiation of the venoms of the lancehead vipers (*Bothrops atrox*, *Bothrops asper*, *Bothrops marajoensis* and *Bothrops moojeni*)

P. Bergamo, P. Venditti, G. Sansone, L. Ferrara and P. Abrescia	733	Detection of a sperm-coating antigen in the semen of *Bubalus bubalis*
G. P. Serrazanetti, L. S. Conte, C. Pagnucco, C. Bergami and L. Milani	743	Sterol content in zooplankton of Adriatic Sea open waters
Heddy Julistiono and Joël Briand	747	Microsomal ethanol-oxidizing system in *Euglena gracilis*. Similarities between *Euglena* and mammalian cell systems
Antoni Polanowski, Tadeusz Wilusz, Murray S. Blum, Pierre Escoubas, Justin O. Schmidt and James Travis	757	Serine proteinase inhibitor profiles in the hemolymph of a wide range of insect species
N. J. Young, P. T. Quinlan and L. J. Goad	761	Cholesteryl esters in the decapod crustacean, *Penaeus monodon*
J. A. J. Thompson and A. E. Sutherland	769	A comparison of methods for sample clean-up prior to quantification of metal-binding proteins
Florence Tromeur, Fabienne Guerard and Yves Le Gal	773	Mucous glycoproteins from the ray *Raja batis*
Bruno Masala, Laura Manca and Carlo Callegarini	779	Symmetric and asymmetric tetramers, due to multiple α- and β-globin chains, account for the hemoglobin polymorphism of the Italian catfish (*Ictalurus* sp.)
Patrick Bonnier and Jean Luc Baert	785	Vitellogenesis in the sand worm, *Nereis diversicolor*
John Hempel, Rolf Eckey, Diane Berie, Hana Romovacek, Dharam P. Agarwal and H. Werner Goedde	791	Human liver glutamic γ-semialdehyde dehydrogenase: structural relationship to the yeast enzyme
Antimo D'Aniello, Amedeo Vetere and Lucia Padula	795	Occurrence of free D-amino acids in the gametes, embryos, larvae and adults of the sea-squirt *Ciona intestinalis*
Pamela Taggart and Matthew Landau	799	Characterization of a G-protein from the mandibular organ of the lobster *Homarus americanus* (Nephropidae, Decapoda)
Shohshi Mizuta, Reiji Yoshinaka, Mamoru Sato, Yoshiaki Itoh and Morihiko Sakaguchi	803	Subunit composition of distinct types of collagens in the muscle of the kuruma prawn *Penaeus japonicus*
R. G. Ackman, T. Takeuchi and G. H. Balazs	813	Fatty acids in depot fats of green turtles *Chelonia mydas* from the Hawaiian Islands and Johnston Atoll
Randall C. Bender, Sarah E. Fryer and Christopher J. Bayne	821	Proteinase inhibitory activity in the plasma of a mollusc: evidence for the presence of α-macroglobulin in *Biomphalaria glabrata*
Achal Garg, Sanja Krča, Branko Kurelec and Ramesh C. Gupta	825	Endogenous DNA modifications in aquatic organisms and their probable biological significance
Taufiqul Huque, Joseph G. Brand and Joseph L. Rabinowitz	833	Metabolism of inositol-1,4,5-trisphosphate in the taste organ of the channel catfish, *Ictalurus punctatus*
Maurice Aknin, Koffi Dogbevi, Abdoulaye Samb, Jean-Michel Kornprobst, Emile M. Gaydou and Joseph Miralles	841	Fatty acid and sterol compositions of eight brown algae from the Senegalese coast
Ramiro Barcia, Izaskun Ibarguren and Juan Ignacio Ramos-Martínez	845	Fructose-1,6-bisphosphatase in mantle of the sea mussel *Mytilus galloprovincialis* Lmk.—III. Seasonal variation of enzymatic activity
Evaldo Reischl and Alcir Luiz Dafré	849	Glutathione mixed disulfides and heterogeneity of chicken hemoglobins

Sunanta Ratanapo and Montri Chulavatnatol	855	Monodin-induced agglutination of *Vibrio vulnificus*, a major infective bacterium in black tiger prawn (*Penaeus monodon*)
Yukio Naito, Ikukatsu Suzuki and Seiji Hasegawa	861	Induction of cystatin S in rat submandibular glands by papain
M. F. Brivio, M. Pagani and G. Scarì	867	Biochemical evidence of phenoloxidase activity (pro-PO system) in larvae of *Allogamus auricollis* (Insecta, Trichoptera)
Momoyo Nakano, Shigehiro Funayama, Maria Benigna M. de Oliveira, Sung Lie Bruel and Elisa Maines Gomes	873	D-Glyceraldehyde-3-phosphate dehydrogenase from HeLa cells—1. Purification and properties of the enzyme
Elisa Maines Gomes, Shigehiro Funayama, Maria Benigna M. de Oliveira, Sung Lie Bruel and Momoyo Nakano	879	D-Glyceraldehyde-3-phosphate dehydrogenase from HeLa cells—2. Immunological characterization
Shin-ichi Teshima, Akio Kanazawa, Ken-ichiro Hitotsumatsu, Kui Shik Kim, Kyoichi Oshida and Shunsuke Koshio	885	Tissue uptake and bioconversion of icosapentaenoic acid and phosphatidylcholine in prawns, *Penaeus* and *Macrobrachium*
Timothy D. Lockey and Donald D. Ourth	891	Isolation and characterization of hemolymph phenoloxidase from *Heliothis virescens* larvae
H. Oulhaj, S. Huynh and A. Nouvelot	897	The biosynthesis of polyunsaturated fatty acids by rat Sertoli cells
Tatsuo Muramatsu, Seigo Tsuchiya, Jun-ichi Okumura and Shunzo Miyoshi	905	Genetic differences in steroid-induced protein synthesis *in vivo* of the liver and magnum in immature chicks (*Gallus domesticus*)
Donald L. Williams and Walter J. Diehl	911	Interactive effects of soil moisture and food on glycolytic metabolism in *Eisenia fetida* (Oligochaeta)
L. H. Teo and J. P. Woodring	919	β-Fructosidase activity in the gut of the house cricket *Acheta domesticus*
Sara I. Roura, Adriana L. Goldemberg, Raúl E. Trucco and Marcos Crupkin	923	Action of Triton X-100 on the biochemical and functional properties of hake (*Merluccius hubbsi*) myofibrils
Hitoo Iwase, Ikuko Ishii-Karakasa and Kyoko Hotta	929	Isolation and partial characterization of serine- and threonine-rich porcine gastric mucus glycopeptides
Manel Chiva, David Kulak, Ellen Rosenberg and Harold E. Kasinsky	935	A protamine in a crustacean, *Balanus nubilus* (Cirripedia, Thoracica) and its coexistence with acidic proteins in sperm nuclei
Carla Caruso, Bruno Rutigliano, Antonio Riccio, Andreas Kunzmann and Guido di Prisco	941	The amino acid sequence of the single hemoglobin of the high-Antarctic fish *Bathydraco marri* Norman
Mario Galindo, Héctor Rodriguez and Carlos Olivares	947	Sperm basic nuclear proteins in the bivalve mollusc *Mesodesma donacium*: characterization and comparison with histone-like and protamine-like proteins of other molluscs
L. Raimondi, R. Pirisino, G. Banchelli, G. Ignesti, L. Conforti, E. Romanelli and F. Buffoni	953	Further studies on semicarbazide-sensitive amine oxidase activities (SSAO) of white adipose tissue
N. A. Latyshev, N. V. Zhukova, S. M. Efremova, A. B. Imbs and O. I. Glysina	961	Effect of habitat on participation of symbionts in formation of the fatty acid pool of fresh-water sponges of Lake Baikal

AUTHOR INDEX

Vol. 102B, Nos 1–4

Abbott G., 93
Abell C. W., 143
Abrescia P., 733
Ackman R. G., 813
Afonso S. G., 87
Agapito M. T., 527
Agarwal D. P., 791
Aguilar M. B., 491
Aknin M., 841
Allen A. K., 363
Alonso T. S., 585
Aranishi F., 499
Arillo A., 209
Armson A., 235
Assakura M. T., 727

Baert J. L., 785
Bahr J. M., 67
Balazs G. H., 813
Banchelli G., 953
Barcia R., 845
Barnabei O., 331
Baró M. d. R. G., 721
Barrantes F. J., 585
Barthélémy L., 205
Basaglia F., 285
Bastrop R., 293
Batel R., 419
Batlle A. M. del C., 83, 87, 433
Bayne C. J., 821
Beanland T. J., 643
Bender R. C., 821
Benga G., 123
Benjouad A., 507
Berdyshev E. V., 639
Bergami C., 743
Bergamo P., 733
Berie D., 791
Bihari N., 419
Bingham E. W., 213
Blum M. S., 757
Bly J. E., 535, 545
Bödeker D., 231
Boissonnet G., 507
Bonnier P., 785
Boucaud-Camou E., 413
Bradley G., 25
Brand J. G., 833
Briand J., 747
Brieva L., 57
Brivio M. F., 867
Brown G. G., 383, 389
Bruel S. L., 873, 879
Brustovetsky N. N., 635
Buchanan K. D., 1
Buffoni F., 953
Burchell B., 425
Burdett K., 551, 561
Burnell A. M., 241
Busconi L., 303, 311

Callegarini C., 779
Canicatti C., 349
Cann-Moisan C., 205
Capuzzo J. E. Mc., 175
Carmona E., 325
Caruso C., 941
Casalongue C. A., 311
Cesari I. M., 471
Chan S. O., 111
Chieffi G., 601
Chinen I., 357
Chiva M., 935
Choubert G., 61
Chuang N.-N., 273, 279
Chulavatnatol M., 855
Clarke D. J., 425
Clegg H., 93
Clem L. W., 535, 545
Conforti L., 953
Connock M. J., 551, 561
Conte L. S., 743
Conway N. M., 175
Coppes Z., 673
Correa T. C., 515
Crupkin M., 923
Cucchi C., 285
Curry G., 93
Cusack M., 93

Dafré A. L., 849
D'Amelio V., 409
D'Aniello A., 795
de Fernández A. M. R., 585
de la Noüe J., 61
De Loof A., 591
Dell'Angelica E. C., 261
Dembitsky V. M., 193
de Oliveira M. B. M., 873, 879
de Romanelli I. C. B., 585
Desmadril M., 507
D'Haese J., 475
Diehl W. J., 911
di Prisco G., 661, 941
Dixon B., 137
Dogbevi K., 841
Drewes C. D., 383, 389
Dungan C. F., 621
Dux L., 19

Eckey R., 791
Efremova S. M., 961
Egorova M. V., 635
Elyakova L. A., 187
Ermácora M. R., 261
Escoubas P., 757

Fautin D. G., 13
Ferdinand W., 123
Ferrara L., 733
Fields J. H. A., 77
Fingerman M., 483
Folco E. J., 303
Folco E. J., 311
Formas J. R., 57
Fryer S. E., 821
Fukuda H., 433
Funayama S., 873, 879
Furtado M. F. D., 515
Furtado M. de, 727

Gal Y. L., 773
Galindo M., 947
Garcia R. E., 573
Garg A., 825
Garín C., 717
Gaydou E. M., 841
Gendry P., 37
George S. G., 425
Gertler S., 377
Getmanova O. E., 639
Glysina O. I., 961
Goad L. J., 761
Goedde H. W., 791
Goldemberg A. L., 923
Gomes E. M., 873, 879
González-Baró M. R., 717
Granath W. O. Jr, 315
Guba G. R., 573
Guerard F., 773
Guillou A., 61
Gunsberg S., 235
Gupta R. C., 825

Hachimi Z. E., 507
Halton D. W., 1
Hara K., 499
Hasegawa S., 861
Hayes T. K., 483
Hempel J., 791
Hieu L. H., 19
Hines G. A., 521
Hitotsumatsu K.-I., 885
Hodârnău A., 123
Hori H., 605
Hori K., 247
Hoshino S., 267
Hotta K., 929
Howe C. J., 643
Huang C. M., 611
Huang J. D., 279
Huberman A., 491
Hudson D. A., 701
Hunt D. T., 491
Huque T., 833
Huynh S., 897

Ibarguren I., 845
Ignesti G., 953
Ikezawa H., 7
Imbs A. B., 961
Incani R. N., 471
Indrasith L. S., 605
Irazú C. E., 721
Ishihara T., 499
Ishii-Karakasa I., 929
Isobe K., 343
Itoh Y., 803
Iwase H., 929

Johnson V., 483
Johnston C. F., 1

Jones C. J. P., 551, 561
Julistiono H., 747
Jürss K., 293

Kanazawa A., 885
Kanoh H., 445
Kashin A. G., 193
Kasinsky H. E., 935
Kato H., 129
Kato Y., 129
Kaufman D. S., 199
Kawabe K., 159
Keenan T. W., 611
Kerner B., 483
Kiehl E., 475
Kim K. S., 885
Kimura S., 255
Kitamura T., 445
Kobayashi Y., 267, 445
Kornprobst J.-M., 841
Koshio S., 885
Koueta N., 413
Krasohin V. B., 187
Krča S., 825
Krishnan K. A., 67
Kubanin A. A., 639
Kulak D., 935
Kültz D., 293
Kunzmann A., 941
Kurelec B., 825
Kwan S.-W., 143

Lacrampe S., 57
Lambert J. G. D., 591
Landau M., 799
Latyshev N. A., 961
Launay J.-F., 37
Lee P. C., 707
Legrand P., 371
Leite L. C. C., 515
Lemarchal P., 371
Lin K.-S., 273, 279
Liptaj T., 397
Litthauer D., 25
Lockey K. H., 451
Lockey T. D., 891
Lomonte B., 325
Lopez G. A., 573
Lowenstein J. M., 13
Lubzens E., 483
Lucchi R., 331

Maeda O., 149, 155
Malin E. L., 213
Manca L., 779
Mandelbaum F. R., 727
Mann V. M., 551, 561
Marchetti M. G., 285
Marsano B., 209
Marseno D. W., 247
Martens H., 231
Masala B., 779
Matoba H., 617
Mayevsky E. I., 635
Melodia F., 209
Meloni B. P., 235
Mendis A. H. W., 235
Meneses P., 403
Middleton R. J., 337
Mihara H., 163
Milani L., 743
Miller G. H., 199
Minucci S., 601
Miralles J., 841
Mita M., 15
Miyajima S., 7
Miyazawa K., 247
Miyoshi S., 905
Mizuta S., 803
Molnár E., 19
Murakami N., 617
Muramatsu T., 905

Nagai S.-I., 343
Nagaoka S., 49
Nagata J., 357
Naito Y., 861
Nakajima N., 159, 163
Nakano M., 873, 879
Nakano T., 31
Navarro M. C., 471
Navarro N., 403
Navone N. M., 83
Navone N. M., 87
Nemcsók J., 19
Niimi T., 169
Nishimura T., 129
Nishita K., 149
Nishita K., 155
Njagi E. N. M., 579
Norcum M. T., 535
Nouvelot A., 897
Nwosu V. U., 551, 561

Oelofsen W., 25
Ojima T., 149, 155
Okitani A., 129
Oku H., 357
Okumura J.-I., 905
Olembo N. K., 579
Olivares C., 947
Oohama E., 357
Osanai M., 49
Oshida K., 885
Oulhaj H., 897
Ourth D. D., 891

Padula L., 795
Pagani M., 867
Pagnucco C., 743
Pan J.-Z., 1
Paredes S., 433
Pearson D. J., 579
Peet D. J., 363
Picarelli Z. P., 119
Pirisino R., 953
Pohajdak B., 137
Polanco M. J., 527
Polanowski A., 757
Poli A., 331
Pollero R. J., 717, 721
Polo C. F., 83, 87
Ponnudurai G., 103
Poruţiu D., 123
Proudman J. A., 67

Quackenbush L. S., 491
Quinland P. T., 761

Rabinowitz J. L., 833
Rack M., 43
Raimondi L., 953
Ramos E. H., 261
Ramos-Martínez J. I., 845
Ratanapo S., 855
Raw I., 515
Reape T. J., 241
Recio J. M., 527
Reischl E., 849
Reynoldson J. A., 235
Rhyu M. R., 129
Riccio A., 941
Rivett D. E., 363
Roch P., 349
Rodriguez H., 947
Romanelli E., 953
Romovacek H., 791
Rosenberg E., 935
Roters F.-J., 627
Roura S. I., 923
Russom J. M., 573
Rutigliano B., 941

Sakaguchi M., 803
Samb A., 841
Sammarco S., 349
Sanchez D., 573
Sanchez J. J., 303, 311
Sansone G., 733
Santome J. A., 261
Santulli A., 409
Sato M., 31, 803
Scari G., 867
Schiripa L. N., 119
Schmidt J. O., 757
Schraermeyer U., 43
Sébert P., 205
Serino I., 601
Serrazanetti G. P., 743
Shabanowitz J., 491
Sharma Y. D., 437
Shaw C., 1
Shimizu I., 713
Shimonishi Y., 691
Shinjyo C., 357
Siebers D., 293
Silcox A., 551, 561
Silveira P. F., 119
Simon B., 205
Srivastava R. K., 97
Stefanov K., 193
Stella C. A., 261
Stieve H., 43
Struve M., 707
Stuart G. R., 137
Studdert C., 303, 311
Sugiura T., 617
Sumi H., 159, 163
Sunila I., 621
Sutherland A. E., 769
Suzuki I., 861
Suzuki N., 679, 691
Svetashev V. I., 639
Swevers L., 591
Szalai A. J., 535, 545

Taggart P., 799
Taguchi R., 7
Takao T., 691
Takesue S., 7
Takesue Y., 7
Takeuchi M., 31
Takeuchi T., 813
Tam C. F., 573
Tamburrini M., 661
Tan N.-H., 103
Teo L. H., 919
Teshima S.-I., 885
Thim L., 1

Thompson J. A. J., 769
Thompson R. C. A., 235
Tijane M., 507
Tom M., 483
Traversa U., 331
Travis J., 757
Tromeur F., 773
Trucco R. E., 923
Tsuchiya S., 905

Uchiyama S., 343
Ueta N., 15
Uhrin P., 397
Urahashi A., 357

Vanfleteren J. R., 219
Varriale B., 601
Vázquez E. S., 83
Venditti P., 733
Vetere A., 795
Vietri N. J., 315
Voogt P. A., 521

Wakita M., 267
Walker C. W., 521
Walker D. G., 337
Watts S. A., 521
Wettenhall R. E. H., 363
Wilkins N. P., 409
Williams D. L., 911
Wilson E. F., 383
Wilusz T., 757
Wong S. S. C., 111
Woodring J. P., 919

Yagi N., 357
Yaginuma T., 169
Yamabata N., 267
Yang B.-C., 273
Yeung D. C. Y., 111
Yokota K., 7
Yon J. M., 507
Yong H. S., 367
Yoshinaka R., 803
Yoshino K.-i., 679, 691
Young N. J., 761
Young N. M., 377

Zahn R. K., 419
Zebe E., 627
Zhukova N. V., 961
Zierdt C. H., 611
Zvyagintseva T. N., 187

Did you know that if you are a contributor to any of Pergamon's Journals you are entitled to

25%
Discount on most Pergamon Books?

Contact your nearest Pergamon office in order to obtain a subject catalogue

Pergamon Press

Pergamon Press Ltd, Headington Hill Hall, Oxford, OX3 0BW, UK
Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA

cor017/p8

Information for Contributors

1. The journal will publish papers that contain the results of original research on the biochemistry, physiology and pharmacology of animals. Particular attention will be paid to those papers in which the subject is approached from a comparative point of view.

Part C of the journal deals with the study of the action of drugs and chemicals on cells, tissues and whole animals. In particular it is concerned with the differences between species, and organs, in their responses to drugs. The section will carry papers of interest to workers on insecticides, molluscides and antiprotozoan drugs.

In addition, basic research will be published on nerve muscle transmitters, nerve/nerve transmitters and other pharmacological studies on the simpler animals. Comparative biochemical and pharmacological studies will also be published.

2. English is the preferred language for papers.

3. Original communications should be sent to the Editor:

Professor G. A. KERKUT (Comparative Biochemistry and Physiology), Department of Physiology and Biochemistry, University of Southampton, Southampton SO9 3TU, England.

4. Submission of a paper to the Editor will be held to imply that it has not previously been published: that it is not under consideration for publication elsewhere; and that if accepted for *Comparative Biochemistry and Physiology* it will not be published elsewhere in the same form, in English or in any other language, without the written consent of the Editor.

5. The typescript, in general, should follow the conventional form—introduction and literature, materials and methods, results, discussion, summary and references. The paper should be prefaced by an abstract appearing immediately after the title and the author's name. *This abstract should consist of numbered sentences that summarize the main facts and conclusions of the paper. Not more than* 100 *words should be used, and* 50 *words are preferable.*

6. Communications should be in the form of typescript, with the lines double spaced on one side of paper (approx. 10 in. × 8 in.) and a left-hand margin of not less than $1\frac{1}{2}$ in. The submission of two typescripts (an original and a carbon copy) will facilitate refereeing; if only one is submitted, it should be the original. In either case, the author should retain a copy for his own use.

7. Authors are requested to keep their communications as concise as possible. **To conserve space, the author should indicate those parts of the paper that might be printed in small type.** Footnotes should be avoided and italics should not be used for emphasis. A running head (shortened title at the top of each right-hand page of an article) of not more than 45 letters and spaces should be supplied for papers with long titles.

8. In general it is not necessary to publish all the individual results of replicated experiments. A statement of the number, their mean value, and some appropriate measure of their variability is usually sufficient. The methods of an analysis followed should be indicated, but statistical details such as tables of analysis of variance should be given only if they are relevant to the discussion. A statement that the difference between the mean value of two groups is statistically significant should include an indication of the level of significance attained.

9. In the interest of economy, and in order to avoid the introduction of errors, tables will be reproduced by photo-offset means directly from the authors' typed manuscript, and the following points should therefore be observed during their preparation:

(*a*) **Tables should be prepared for direct camera copy.** Refer to current tables in the journal, and arrange the spatial layout of your table to conform.

(*b*) Type should be clear and even.

(*c*) Tables, headings and legends should be typed on a separate sheet. Indicate on a Xerox copy of the table where the headings and the legends should be inserted.

(*d*) Insert heavy rules at the head and foot of each table, and fine rules below column headings.

(*e*) Leave the *minimum* space required to avoid confusion between columns.

(*f*) Genus and species names, and other words normally italicized, should be typed in italics or underlined.

For guidance on how best to prepare tables for photographic reproduction, and in case of difficulty, please contact the Photoreprographic Section of your institution who will give you assistance.

10. All necessary illustrations should accompany the typescript but should not be inserted in the text. All photographs, charts and diagrams are to be referred to as "Figs", and they should be numbered consecutively in the order in which they are referred to in the text.

(*a*) **Photographs, including photomicrographs, should be glossy prints and should be restricted to the minimum necessary.** Each should have, lightly written on the back, the author's name, the figure number and an indication of which is the top of the picture. Lines or lettering to appear on the photographs should be in **good quality stencil.**

(*b*) *Captions to figures* should be typed consecutively on a separate page or pages at the end of the paper. The caption or legend should be sufficient so that the tables or figures are intelligible without reference to the text. The same data should not be published in tables and figures.

(*c*) Authors are requested not to submit sheets of illustrations larger than foolscap size.

(*d*) Authors should note that all illustrations, diagrams and graphs should have the FINAL labelling ready for press.

11. The full Latin name of all animal species used in the investigation must be given.

12. Full references should be given at the end of the paper in alphabetical order and should include the names of the authors, the date of publication, the full title of the paper, title of the journal, volume number and the first and last page numbers. References to books should include the number of the edition, volume, relevant pagination, the name of the publisher and the town of publication. In the text a reference should be quoted by the author's name and the date placed in parentheses, as, for example: Smith (1960). Examples of full references are given below:

Ashby W. (1943) Carbonic anhydrase in mammalian issue. *J. biol. Chem.* **151,** 521–527.

Kogh A., Warren B. and Holt C. (1977) *Physiology of Capillaries*, 2nd edn, Vol. 1, pp. 67–75. Pergamon Press, Oxford.

13. Abbreviations. Only standard abbreviations should be used. Where specialized terms are given, a specific abbreviation should be indicated as a footnote to the paper.

14. Page proofs will be sent to the author, or to the first-mentioned author in papers of multiple authorship, for correction. Reprints and copies of the issue (at a specially reduced rate) may be purchased using the order form which will accompany the proofs.

15. **Corrections to the proofs must be restricted to printer's errors only. Other than those, substantial alterations may be charged to the author.**

16. **The original manuscript and diagrams will be discarded one month after publication unless the Publisher is requested to return original material to the author.**

Printed in Great Britain by BPCC Wheatons Ltd, Exeter